

**ABSTRACT****Multi-Layer Barrier Allowing Recovery Anneal for Ferroelectric Capacitors**

5           A multi-layer barrier for a ferroelectric capacitor includes an outdiffusion  
barrier layer permeable to both hydrogen and oxygen. The outdiffusion barrier  
layer covers the ferroelectric of the capacitor. Oxygen passes through the  
outdiffusion barrier layer into the ferroelectric during an oxygen anneal in order  
to repair damage to the ferroelectric caused during etching. The outdiffusion  
10 barrier layer reduces the decomposition of the ferroelectric by blocking  
molecules leaving the ferroelectric during the oxygen anneal. The multi-layer  
barrier also includes a hydrogen barrier layer deposited on the outdiffusion  
barrier layer after repair of the ferroelectric by the oxygen anneal. The  
hydrogen barrier layer allows the multi-layer barrier to block the passage of  
15 hydrogen into the ferroelectric during back-end processes.

Fig. 3